

## **REMARKS**

### **I. Telephonic Interview**

Applicants kindly thank Examiner Pham for the opportunity to discuss the issues in this case and the claim amendments made herein during the telephone interview on September 14, 2006. During the interview, various prior art references were discussed, in particular the Young No reference. Also, the claim limitations incorporated into all of the independent claims from dependent claim 2, in particular the loading of updated firmware onto the removable controller card, were also discussed. An agreement was not reached regarding the patentability of the independent claims. The Examiner stated that he would review the arguments in conjunction with the submitted after-final amendment herein.

### **II. Rejection**

The present amendment and remarks are submitted in response to the Final Office Action entered in the present case and mailed on July 14, 2006. Claims 1-18 are pending in the application. Claims 10-15 have been withdrawn from consideration. Claim 1 stands rejected under 35 U.S.C. Section 103(a) as being unpatentable over Young No (U.S. 6,587,140). Claims 2-9 and 16-18 stand rejected under 35 U.S.C. Section 103(a) as being unpatentable over Young in view of Benjamin et al. (U.S. 6,113,208). With this response Applicants have amended independent claims 1, 5 and 8. Claim 2 has been amended. Applicants respectfully submit that all of the remaining claims are now in condition for allowance.

Amended Claim 1 is representative of the changes that have been made to the pending claims. Claim 1 now recites that the printer controller on the removable PC card operates to control all of the printer controller functions of the printer. This language is intended to emphasize that the printer itself, without the recited controller, is unable to perform any significant printing-related functions normally allocated to an on-board printer controller in a conventional printer. Claim 1, in particular, recites that the office machine does not have any printer controller circuitry and that the controller, residing on a separate PC card, provides substantially all printer controller functions. Claims 5 and 8 include amendments that now recite that the printer controller on the removable PC card controls substantially all of the printer controller functions of the office machine or printer. Furthermore, claims 1, 5 and 8 also recite a feature from dependent claim 2 to further facilitate upgrades, wherein the printer controller, on the separate PC card, can receive updated printer controller firmware automatically. These amendments are supported by the specification and the originally filed claims.

The claimed embodiments of the invention are constructed for "reducing production costs and shortening the time-to-market" of the printing product by facilitating the system integration among the printer components. (Specification at 1, lines 12-13). In particular, the invention addresses the problem of integrating separately manufactured controller subassemblies with the print engine assemblies and the "many costs and time consuming steps that are involved in system interpretation." (Specification at 2, lines 1-2). By offering a printer or office machine with a completely removable controller subassembly, wherein substantially all of the control functions and

control hardware is contained on the removable PC card, a user can easily integrate the two components together by simply plugging the card into the printer. This allows changing of all controller components together, which is critical given the fact that components such as "the DC Controller, the laser print engine, and the digital printer formatter are connected together in a particular format and dependent on each other." (Specification at 3, lines 14-16). Keeping the controller hardware separate also allows for the latest operating software to be included on the card for use with the printer and allows the user to conveniently upgrade the entire control system when necessary. Furthermore, the controller hardware operates to receive automatically updated firmware, which further facilitates integration by allowing the most up-to-date firmware to be included at the time of use. (See Specification at pages 1-3, 11).

Applicants reiterate that one of skill in the art would not combine Young and Benjamin et al. without improper hindsight reconstruction. Notwithstanding, Young and Benjamin et al., alone and in combination, fail to teach these features of the claimed invention. While the Young reference does teach an intelligence circuit 90 that is integrated onto a removable PC card 7, the circuit functions to "convert the data stream received from the imaging unit 33 into printer instructions." (col. 4, lines 16-38; FIGS. 1-2)). Other critical functions of the printer in Young, however, are retained onboard the printer itself. For example, control and power circuitry 46, including a printhead controller circuit 77, are onboard and connected to the printer 5 as shown in FIG. 1. (col. 3, lines 60-67). Also, the disclosure of Young describes the EPROM 81, again located on the printer 5, that controls the movement of other printer components. (col.

4, lines 4-8). Young says nothing of removing substantially all of the printer control operations of the printer controller and placing them on a separate, removable PC card to address the problems in printer manufacturing solved by the Applicants' invention. Furthermore, none of the art discusses the ability of such a card to receive updated firmware automatically.

As discussed in previous responses, the Benjamin et al. reference relates generally to an ink cartridge-mounted processor that performs limited functions relating to reordering of the ink cartridge and certain related display information. (Col. 3, lines 31-49). Benjamin et al. fails to disclose a removable component that includes a printer controller operable to control more printing functions than this.

Thus, even when combined, Young and Benjamin et al. do not teach or suggest the invention as now claimed. Claims 1, 5 and 8 and the claims depending therefrom would not have been obvious to one of ordinary skill in the art at the time the invention was made. Therefore the claims should be allowed.

Respectfully submitted,



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